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ABSTRACT

A model for planning regarding college faculty is described. The USC Faculty Planning Model was developed by Robert Linnell and Paul Gray in 1974 at the University of Southern California as an interactive mathematical model to trace characteristics of faculty groups over time. Characteristics listed by the model include: faculty age distribution, number of openings, affirmative action data, number of retirements per year, total and average faculty salaries, and percent of faculty tenured. Faculty planning and modeling is claimed to have three basic advantages over other approaches to policy making: (1) modeling simulates human behavior, (2) modeling is economical in terms of time and money, and (3) modeling permits policies to be tried out so that problems with the policies can be discovered before they would arise via implementation. Advantages and disadvantages of this approach and some examples of its application are considered. Two ways that this computer system planning model can be utilized are explained, and costs are quoted. (SW)

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THE USC FACULTY PLANNING MODEL

A History and Description

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THE USC FACULTY PLANNING MODEL
A History and Description

In the 1960s and early 1970s colleges and universities around the United States were confronted with increased enrollments and demand for the services provided by higher education. This period of expansion was welcomed by the higher education community, especially since it meant an increase in the financial base and prestige of the institutions. However, in the middle and late seventies the institutions were made aware that this period of expansion was nearing an end. Changing circumstances would result in a period of either decline in enrollments or, at best, a need for steady-state staffing.

During the expansion period colleges and universities attracted faculty to their institutions with inducements such as high pay, easy tenure, and good benefits which would ensure keeping a high quality faculty at the institution. These commitments were funded by an expanding financial base. However, when the enrollments leveled off, the financial base ceased to expand. Therefore, some institutions were placed in a financial position inadequate to meet prior goals and commitments. Current taxpayer unrest has reduced the likelihood that this shortfall will be met by government funding without extensive justification.

In addition to coping with a financial base no longer growing, institutions are now faced with mandatory later retirement, with governmental affirmative action requirements and with student demands for program flexibilty and relevance. In this predicament, when decision-makers must attempt to determine policies which will affect their institutions for years to come, faculty planning concepts and models can help to illuminate current problems and pinpoint areas of potential problems resulting from current policies and practices.

One such tool or aid in faculty planning is the USC Faculty Planning Model developed by Robert Linnell and Paul Gray with assistance from the EXXON Education Foundation. This was developed in 1974 at the University of Southern California as an interactive mathematical model to trace characteriatics of faculty groups over time. Some of the characteristics listed by the model include:

Average faculty age
Faculty age distribution
Number of openings
Affirmative action data
Number of quits per year
Number of retirements per year
Faculty rank distribution
Total of faculty salaries
Average faculty salary
Percent of total of faculty salaries committed to tenured faculty
Percent of faculty tenured
Number tenured and number denied tenure per year

Faculty planning and modeling has three basic advantages over other approaches to policy-making: (a) modeling simulates human behavior, (b) modeling is economical in terms of time and money, and (c) modeling permits policies to be tried out so that problems with the policies can be discovered before they would arise via implementation. The computer cost for one run (five iterations) for a faculty of 100 is about $4.00 and takes about five minutes (including input and output time). Output is available for immediate analysis by a faculty planning analyst or by faculty committees or an administrator.

This model does have some limitations which some may consider serious. First, the model does not trace individual faculty members specifically but analyzes faculty groups. An administrator would not be told whom to hire or fire by this model but rather how many. Neither would an administrator find out whom to deny tenure but how many to tenure or deny tenure. The model will accept as input broad policies and percentages and will map the consequences of these policies on the faculty. For example, the model would take a proposed promotion policy and, combining it with the other policies and practices of an institution, determine the effects of that policy on the faculty for the next five to twenty years. If a policy is not working correctly, the model cannot change policies in the middle of a planning period as administrators can. It will simply forecast the probable result of each policy combination along a time line.

One of the major problems confronted when doing faculty planning in some institutions is resistance of the faculty and/or administration to implications of the faculty planning study. Changes in policy modify the established modus operandi and are thus perceived as menacing. Traditionally, colleges and universities have been run in a semiautonomous manner to prevent real or imagined encroachments on academic freedoms. The Faculty Planning Model can only illustrate the characteristics of the faculty which are then to be interpreted as problems or strengths in light of the policies being studied.

The USC Faculty Planning Model has been used with varying degrees of success at major and minor institutions in the United States, both privately supported and publicly supported. Confidentiality agreements prevent disclosure of the names of many of the institutions. The USC Faculty Planning Model is also currently being used as a teaching aid in one of the Ivy League institutions.

Some examples will illustrate the use of the USC Faculty Planning Model. In one case, a series of analyses were made to demonstrate that an affirmative action goal of the federal government was unrealistic. In this case, the USC Faculty Model indicated that if the department was to achieve the pool availability level of female faculty within three years, over 65% of the new hires would have to be female, a hire rate double the pool level. It was agreed that such a high hire rate was not realistic and a more reasonable goal was accepted.

Another study was of the effect of late retirement on the number of openings at an institution. At a community college it was found that the number of faculty openings would decrease dramatically when current policies were combined with late retirement. With a current faculty of 200, present policy and practice provides about seven (7) openings per year (3.5% turnover). With late retirements (assuming many faculty continue to retire early and by age 65) the annual turnover rate drops to 2.5%. With an annual 1% decline in total faculty, the turnover rate decreases to 1.5% per year. In general, a turnover rate of 5% per year is desirable for maintenance of program vitality.

The planning model can also demonstrate the relationship between faculty characteristics such as tenure and faculty rank distribution with costs. In one particular state university, a revision of policy affecting faculty rank distribution was shown to save 15%, or $700,000.00, of faculty salary costs.

In another case, the model was used to indicate that a major revision of policy and practice was necessary if the institution were to avoid severe faculty retrenchment. Detailed planning studies were conducted, but the administration of this institution resigned before any plans could be implemented. This example points out the need for adequate faculty planning prior to serious crisis, since at some point planning is too late and more drastic immediate action must be taken. The model can point out problems and indicate possible solutions when interpreted correctly, but as with all planning models, the hypotheses of the models must yield to the realities of the situation.

Typically, some revisions are required when adapting the USC Faculty Planning

Model to a new system or institution and its policies. Sometimes the changes are minor (requiring a change in format of about 15 lines); sometimes, major (such as inserting a new salary format or promotion policy). Data entries must be made according to a specified format, but the USC Faculty Planning Services has developed new documentation to ease any problem. There are currently five working versions of the USC Faculty Planning Model designed for different situations.

The USC Faculty Planning Model can be utilized in either of two ways. The first is to purchase a copy of the model and adapt it to a different computer system. The cost for obtaining the model from USC Faculty Planning Services is $200.00. The costs for running the model, adapting the model, and interpreting the model must be borne by the host institution. The advantages of this approach are that the model will continue to be available to the institution and that the institution will be able to interpret the data in light of its own special circumstances.

The other option available for utilizing the USC Faculty Planning Model is to submit data to the USC Faculty Planning Services for detailed analysis. This approach can, in some cases, be more economical to the institution if it does not have the necessary time, personnel, or equipment. This approach takes about six to ten weeks depending on the size and complexity of the institution. The total cost for the analysis is $1250.00 for an institution with a faculty of 100 or fewer. However, the EXXON Education Foundation is subsidizing half of the cost of this analysis, so the actual cost to the institution would be $625.00 (with a charge of $2.00 per each faculty member in excess of 100). This package includes 10-15 runs, an analysis of the data, data preparation, and some modification of the model if necessary. This option also permits comparisons to be made with a range of other institutions' situations by staff familiar with a number of institutions rather than just one.

THE USC FACULTY PLANNING MODEL

COSTS

A. USC FACULTY PLANNING SERVICES ANALYSIS

Estimates are based on an hypothetical institution with 100 faculty

1) INITIAL CONTACTS
   - Compilation and organization of an adequate data base
   - 2 days of technical assistance
   - Communication (including telephone, postage, secretarial assistance)
   - Computer costs

   $200.00

2) RUNS (SIMULATIONS)
   - Model modification
   - 10-15 Runs
   - Computer time and miscellaneous communications

   $340.00

3) ANALYSIS
   - Data review
   - Additional runs
   - Draft report

   $310.00

4) COMPLETE REPORT
   - Compilation
   - Secretarial assistance and copies

   $150.00

TOTAL	$1000.00
Overhead	250.00
GRAND TOTAL	$1250.00

EXXON Subsidy---50%

COST to institution $625.00

(add $2 per each faculty in excess of 100)

B. BASIC USC FACULTY PLANNING MODEL*

1) Taped copy of the USC Faculty Planning Model
2) Documentation on USC Faculty Planning Model
3) Documentation on Policy Loading Program
4) Documentation on Faculty Data-loading program

TOTAL $200.00

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* The USC Faculty Planning Model is written in BASIC computer language and is transportable to a system supporting interactive BASIC such as a PDP-10 or PDP-11.